[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2015-2393; Special Conditions No. 25-695-SC]

Special Conditions: Bombardier Inc. Model BD-700-2A12 and BD-700-2A13 Airplanes; Fuselage Post-Crash Fire Survivability

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions.

SUMMARY: These special conditions are issued for the Bombardier Inc. (Bombardier) Model BD-700-2A12 and BD-700-2A13 airplanes. These airplanes will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. This feature is an aluminum-lithium fuselage construction that may provide different levels of protection from post-crash fire threats than would similar airplanes constructed from traditional aluminum structure. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: Effective **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

FOR FURTHER INFORMATION CONTACT: Alan Sinclair, FAA, Airframe and Cabin Safety Branch, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington, 98057-3356; telephone 425-227-2195; facsimile 425-227-1232.

SUPPLEMENTARY INFORMATION:

Background

On May 30, 2012, Bombardier applied for an amendment to type certificate no. T00003NY to include the new Model BD-700-2A12 and BD-700-2A13 airplanes. These airplanes are derivatives of the Model BD-700 series of airplanes and are marketed as the Bombardier Global 7000 (Model BD-700-2A12) and Global 8000 (Model BD-700-2A13). These airplanes are twin-engine, transport-category, executive-interior business jets. The maximum passenger capacity is 19 and the maximum takeoff weights are 106,250 lbs. (Model BD-700-2A12) and 104,800 lbs. (Model BD-700-2A13).

Type Certification Basis

Under the provisions of Title 14, Code of Federal Regulations (14 CFR) 21.101, Bombardier must show that the Model BD-700-2A12 and BD-700-2A13 airplanes meet the applicable provisions of the regulations listed in Type Certificate No. T00003NY, or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Model BD-700-2A12 and BD-700-2A13 airplanes because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, or should any other model already included on the same type certificate be modified to incorporate the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Model BD-700-2A12 and BD-700-2A13 airplanes must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type-certification basis under § 21.101.

Novel or Unusual Design Feature

Bombardier Inc. Model BD-700-2A12 and BD-700-2A13 airplanes will incorporate the following novel or unusual design feature: The fuselage will be fabricated using aluminum-lithium alloy materials instead of conventional aluminum.

Discussion

The certification basis for the Bombardier Model BD-700-2A12 and BD-700-2A11 airplanes does not include the burn through requirements defined in § 25.856(b) because both airplane models have a passenger capacity of fewer than 20. The Model BD-700-2A12 and BD-700-2A13 airplanes are introducing a new material other than what has traditionally been shown to be survivable from a "toxic" standpoint. The applicant must ensure that the material being installed on an airplane does not introduce a new hazard that would reduce the survivability of the passengers during a post-crash situation, or that would provide levels of toxic fumes that would be lethal or incapacitating, thus preventing evacuation of the airplane in a crash scenario.

In accordance with § 21.16, fuselage structure that includes aluminum-lithium construction is an unusual design feature for large, transport-category airplanes certificated under 14 CFR part 25.

Regulations applicable to burn requirements, including §§ 25.853 and 25.856(a), remain valid for these airplanes, but do not protect against the threat generated from potentially toxic levels of gases produced from aluminum-lithium alloy materials.

These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Discussion of Comments

Notice of Proposed Special Conditions No. 25-16-07-SC for the Bombardier Model BD-700-2A12 and BD-700-2A13 airplanes was published in the Federal Register on October 26, 2016 (81 FR 74347). One comment was received.

The commenter acknowledged that the use of the aluminum-lithium alloy would require full certification to the existing regulations. However, they contend that the material is not novel and unusual and does not require special conditions.

The FAA does not agree. While it is true that, with the level of lithium in the alloys presently tested, the proposed aluminum-lithium alloy does not appear to pose a significant risk, the existing regulations, as discussed above, do not adequately address the use of this specific alloy technology. Lithium metal is highly flammable and toxic; therefore, the FAA is concerned about the use of lithium in aircraft alloys. The FAA did not have data on the properties of aluminum-lithium when exposed to a post-crash fire threat prior to applying these special conditions.

Therefore, special conditions are required until the regulations are amended to provide sufficient requirements for the application of this new alloy technology.

Applicability

As discussed above, these special conditions are applicable to the Bombardier Model BD-700-2A12 and BD-700-2A13 airplanes. Should Bombardier apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to the other model as well.

Conclusion

This action affects only one novel or unusual design feature on Bombardier Model BD-700-2A12 and BD-700-2A13 airplanes. It is not a rule of general applicabilit.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Bombardier Model BD-700-2A12 and BD-700-2A13 airplanes.

The Model BD-700-2A12 and BD-700-2A13 airplanes must show that toxic levels of gases produced from the aluminum-lithium material, when exposed to a post-crash fire threat, are in no way an additional threat to the passengers, including, but not limited to, their ability to evacuate, when compared to traditional aluminum airplane materials.

Issued in Renton, Washington.

Victor Wicklund,
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Aircraft Certification Service.

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